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NOAA HAZARDOUS WASTE SITE REPORT, June, 1987

AR100236

## Woodlawn County Landfill Woodlawn, Maryland

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### SITE EXPOSURE POTENTIAL

Woodlawn County Landfill covers approximately 15 hectares in Woodlawn, Cecil County, Maryland. The site was originally used as a sand and gravel quarry before it was purchased by Cecil County in 1965. The county operated the site as an open landfill from 1965 to January 1979, when it was closed under court order. Cecil County filled two large, unlined quarrying pits, Cells A and B, with agricultural, municipal, and industrial wastes. The landfill was open 24 hours per day with no supervision until 1973. Few records exist for disposal operations during the entire period of operation. According to the State of Maryland, the only documented waste disposal on-site consisted of 712 metric tons of polyvinyl chloride sludge from the Firestone Tire and Rubber Company in Perryville, Maryland. The Firestone PVC sludge was dumped indiscriminately in the two pits. The landfill was converted to a transfer station in 1978. Waste PVC sludge was buried in two clay-lined pits under State permit. The pits were closed and capped in early 1981.<sup>1</sup>

Woodlawn Landfill is located in the Eastern Piedmont Province. Groundwater in the area is generally thought to flow from the northeast to the southwest. A small, unnamed perennial stream is located along the southern border of the landfill. This stream enters Basin Run approximately 3 kilometers downstream. Basin Run is a State-designated trout stream that empties into Octoraro Creek just above its confluence with the Susquehanna River. Mill Creek is located approximately 2 kilometers south of the site and flows in a southerly direction to the upper reaches of Chesapeake Bay.

### CHEMICAL HAZARDS

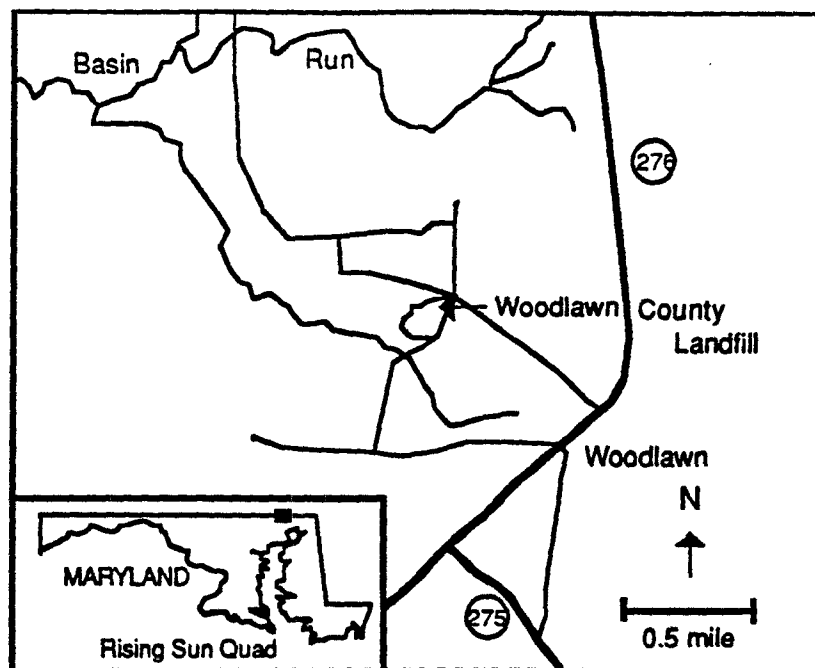
#### Contaminants and Concentrations

Sampling activities of the State and U.S. Environmental Protection Agency showed vinyl chloride in concentrations of up to 37 ppb, benzene, tetrahydrofuran (THF) (up to 4,250 ppb), toluene, and lead in groundwater and leachate samples. Solvents (benzene, toluene, and methanol) and lead were detected in various monitoring wells throughout the site. Based on their presence in leachate seeps and in stream sediments, these materials are migrating off-site. The vinyl chloride and THF may also be migrating in a groundwater plume. The gradient from the landfill to the stream is fairly steep. The solvents and lead may enter the stream through erosion, leachate seeps, and possible groundwater discharge to stream beds.<sup>1</sup>

#### Extent of Contamination

The extent of on-site contamination may be limited to the two pits and contaminated groundwater, but still needs to be fully characterized. Cell A may be the source for elevated levels of THF and Cell B may be a source for vinyl chloride. Toluene (116 ppb), tetrachloroethene (16 ppb), and lead (11 ppm) were detected in stream sediments approximately 60 meters from the site. These levels of lead are about three times background.

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ORIGINAL  
(Red)

#### Duration of Contaminant Release

The period of release through overflow, erosion, and leachate seeps extends through the operation of the landfill before capping in 1979. White material from the Firestone sludge disposal had been reported to migrate into the stream during operation of the landfill. After capping of the sludge pits, releases continued via leachate seeps and possible groundwater migration.

#### TRUST HABITATS AND RESOURCES

##### Habitats and Resources at Risk

Basin Run, Octoraro Creek, Mill Creek, the Susquehanna River, and the upper reaches of Chesapeake Bay all contain anadromous and resident fish species. Basin Run contains anadromous populations of alewife, while Mill Creek contains blueback herring. The Susquehanna River and Chesapeake Bay contain anadromous and resident species that use the area for spawning, nursery, migration, and as a nursery.<sup>2,3</sup> Table 1 lists the anadromous and resident species that use the habitats potentially impacted by the Woodlawn site.

Recreational fisheries exist in Basin Run and Mill Creek. Both commercial and recreational fisheries for anadromous and resident species exist in the Susquehanna River near the site, as well as commercial harvests of channel catfish in Chesapeake Bay.

##### Contaminants in Habitats and Resources

The principal contaminants found on the Woodlawn site are volatile organic compounds in the groundwater.<sup>4</sup> Maximum concentrations of the contaminants observed in groundwater are presented in Table 2. All of these compounds are volatile and in the surface waters. Methanol is very water-soluble. Sorption to sediments would be minimal for all of these substances. Lead was also reported to have been found in an off-site stream sample, as were toluene and tetrachloroethene, but no quantitative data were available. The

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substances are also VOCs. Lead is persistent and would accumulate in sediments and in biological tissue.

Table 1. Anadromous and Resident Fish Species That Utilize the Area Potentially Impacted by the Woodlawn Landfill Site<sup>2</sup>

Species	Adult Habitat	Spawning Area	Nursery Area	Commercial Fishery	Recreational Fishery	Migratory Route
<b>Basin Run and Mill Creek</b>						
<u>Anadromous</u>						
blueback herring		x	x			x
alewife		x	x			x
<u>Resident</u>						
white perch	x	x	x		x	x
yellow perch	x	x	x		x	
<b>Chesapeake Bay/Susquehanna R.</b>						
<u>Anadromous/Catadromous</u>						
American eel				x	x	
blueback herring				x	x	x
hickory shad		x	x		x	x
alewife				x	x	x
American shad				x	x	x
gizzard shad		x	x	x	x	
striped bass					x	
<u>Resident</u>						
channel catfish		x	x	x	x	
brown bullhead		x	x	x	x	
white perch					x	
largemouth bass					x	

The extent of contamination that has occurred off-site due to the Woodlawn site is unknown. No sampling of Mill Creek has occurred. No data are available that describe contaminant levels from the limited sampling that has occurred in the unnamed stream. Any contaminants would have to migrate 2.5 kilometers via the surface waters prior to reaching anadromous habitat in Basin Run.

Table 2. Maximum Concentrations (ppb) of Contaminants Observed in Groundwater<sup>1</sup>

Compound	Concentration
benzene	61
ethyl benzene	10
chloromethane	160
methanol	1,900,000
methylene chloride	940
toluene	1600
vinyl chloride	36
xylenes	46

Tetrachloroethylene, toluene, and the other VOCs would likely volatilize to below toxic levels prior to reaching Basin Run. However, lead is persistent and readily sorbed onto the sediments. It is fairly immobile, but is toxic at low concentrations. Acute and chronic toxicities range from 58 µg/l to 170 µg/l for fish species.<sup>4</sup> If contamination is high

release into the watershed is frequent, then there is a chance of impacting anadromous resources. If, however, contamination is low to moderate and release is infrequent, proper remedial activity could prevent anadromous fish injury. Spawning and nursery populations of alewife use Basin Run.

The primary contaminant pathway to Mill Creek is by groundwater transport. Mill Creek is only 2 kilometers south of the site. Surface topography suggests that a groundwater divide is present that will channel groundwater to the northwest. If this is the case, the blueback herring population of Mill Creek would not be affected by the Woodlawn site.

## SITE ACTIONS

### Response Category

State Enforcement Lead

Federal Fund Lead

Federal Enforcement Lead

State Fund Lead

Federal Facility

### Responsible Parties Identified

No responsible parties have yet been identified.

## CONTACTS

### NOAA Reviewer

CRC:	Alyce T. Fritz	(215) 597-3636
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### EPA Contacts

Legal:	Diane Agl	(215) 597-8905
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### Co-Trustee Contacts

DOI:	Steve Goodbred, USFWS	(301) 269-5448
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## REFERENCES

1. Hazard Ranking System Documentation Records and reference package. 1985. Philadelphia: U.S. Environmental Protection Agency Region 3 Remedial Response.
2. Beccassio, A.D., et al. 1980. Atlantic Coast Ecological Inventory: User's Guide and Information Base. FWS/OBS-80-51. Washington D.C.: U.S. Fish and Wildlife Service. 163 pp. and maps.
3. Odell, Jay, Fishery Biologist, Maryland Department of Natural Resources, Anadromous Fish Program, Baltimore, personal communication, April 1987.
4. Clement Associates, Inc. 1985. Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Sites. Final Report. U.S. Environmental Protection Agency.

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